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Appl. No.	: **10/799,800**
Applicant(s)	: **ROOSENDAAL et al.**
Filed	: **12 Mar 2004**
TC/A.U.	: **2871**
Examiner	: **NGUYEN, Hoan C.**
Atty. Docket	: **NL-010603B**

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On: 18 February 2006

By: [signature]

Title: **ARRANGEMENTS IN A TRANSFLECTIVE LIQUID CRYSTAL DISPLAY**

Mail Stop: **APPEAL BRIEF - PATENTS**
Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL UNDER 37 CFR 41.37

Sir:

This is an appeal from the decision of the Examiner dated 3 October 2005, finally rejecting claims 11-14, 17-18, 21-24, and 27-28 of the subject application.

This paper includes (each beginning on a separate sheet):

1. **Appeal Brief, with appendices; and**
2. **Credit card authorization in the amount of $500.**

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APPEAL BRIEF

I. REAL PARTY IN INTEREST

The above-identified application is assigned, in its entirety, to **Koninklijke Philips Electronics N. V., Groenewoudseweg 1, 5621 BA, Eindhoven, NL, The Netherlands.**

II. RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any co-pending appeal or interference that will directly affect, or be directly affected by, or have any bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-10 are canceled.

Claims 11-30 are pending in the application.

Claims 15-16, 19-20, 25-26, and 29-30 are withdrawn.

Claims 11-14, 17, 21-24, and 27 stand rejected by the Examiner under 35 U.S.C. 102(b).

Claims 18 and 28 stand rejected by the Examiner under 35 U.S.C. 103(a).

These rejected claims are the subject of this appeal.

IV. STATUS OF AMENDMENTS

No amendments were filed subsequent to the final rejection in the Office Action dated 3 October 2005.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention addresses a transflective display device wherein each pixel includes a transmissive area and a reflective area. To provide for efficient operation in both a front-lighted reflective mode and a back-lighted transmissive mode, a patterned optical retardation layer is used to provide a different optical retardation in each of the areas. (Applicants' page 2, lines 15-20.)

As claimed in independent claim 11, the invention comprises a patterned optical layer (16a of FIG. 1) comprising a film (page 8, lines 8-9) that includes a pattern of first area segments (116a) and second area segments (116b), wherein the first area segments (116a) provide a first optical retardation (page 8, lines 9-13); the second area segments (116b) provide a second optical retardation (page 8, lines 14-16); and the second optical retardation is substantially less than the first optical retardation (page 7, lines 3-11).

As claimed in dependent claim 17, the invention comprises the patterned optical layer of claim 11, wherein: the first area segments include a first polymerized liquid crystal material having a planar orientation at a first angle; and the second area segments include a second polymerized liquid crystal material having a planar orientation at a second angle, the first angle being substantially different from the second angle (page 8, line 31 through page 9, line 3).

As claimed in dependent claim 18, the invention comprises the patterned optical layer of claim 17, wherein a difference between the first angle and the second angle is approximately 45 degrees (page 8, lines 32-34).

As claimed in independent claim 21, the invention comprises a transflective display device comprising: a plurality of pixels (page 4, lines 26-27); and a patterned optical layer (16a) that includes a pattern of pairs of first area segments (116a) and second area segments (116b), each pair of the plurality of pairs corresponding to

each pixel of the plurality of pixels, wherein: the first area segments (116a) provide a first optical retardation (page 8, lines 9-13); the second area segments provide a second optical retardation (page 8, lines 14-16); and the second optical retardation is substantially less than the first optical retardation (page 7, lines 3-11).

As claimed in dependent claim 27, the invention comprises the transflective display device of claim 21, wherein: the first area segments include a first polymerized liquid crystal material having a planar orientation at a first angle; and the second area segments include a second polymerized liquid crystal material having a planar orientation at a second angle, the first angle being substantially different from the second angle (page 8, line 31 through page 9, line 3).

As claimed in dependent claim 28, the invention comprises the transflective display device of claim 27, wherein the difference between the first angle and the second angle is approximately 45 degrees (page 8, lines 32-34).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 11-14 and 21-24 stand rejected under 35 U.S.C. 102(b) over Kubo et al. (USP 6,295,109, hereinafter Kubo).

Claims 11, 17, 21, and 27 stand rejected under 35 U.S.C. 102(b) over Yoshida et al. (USPA 2002/0047968, hereinafter Yoshida).

Claims 18 and 28 stand rejected under 35 U.S.C. 103(a) over Yoshida and Ham (USP 6,184,961).

VII. ARGUMENT

Claims 11-14 and 21-24 stand rejected under 35 U.S.C. 102(b) over Kubo

Claims 11-14 and 21-24

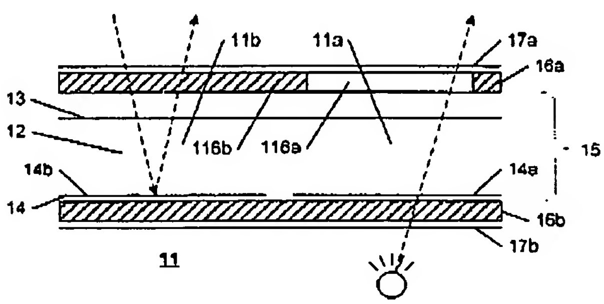
Each of the independent claims 11 and 21, upon which claims 12-14 and 22-24 depend, includes a patterned optical layer comprising a film that includes a pattern of first area segments (116a) and second area segments (116b), each segment providing a different optical retardation.

MPEP 2131 states:

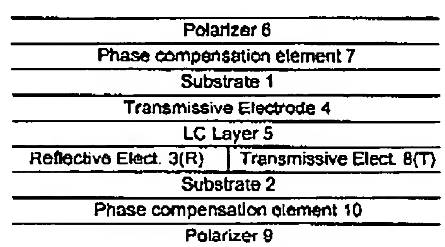
> "A claim is anticipated only if ***each and every element*** as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The ***identical invention*** must be shown in as ***complete detail*** as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Kubo does not teach a film that includes area segments having different optical retardations.

For convenience, the applicants' FIG. 1 and Kubo's FIG. 2 are illustrated below.



Applicants' FIG. 1



Kubo's FIG. 2

As can be seen, the arrangement of Kubo's layers substantially corresponds to the arrangement of the applicants' layers. That is Kubo's polarizer layer 6 corresponds to the applicants' polarizer 17a; Kubo's phase compensation element 7 corresponds to the applicants' optical retardation layer 16a; Kubo's transmissive electrode 4 corresponds to the applicants' transparent electrode 13; and so on.

However, Kubo does not teach that the phase compensation element 7 is patterned, whereas the applicants' corresponding optical retardation layer 16a is patterned so as to provide areas 116a, 116b that have different optical retardations.

The Office action asserts that Kubo teaches a patterned optical layer that provides different retardations via an apparent combination of Kubo's LC layer 5 and the layer that includes electrodes 3(R) and 8(T). The applicants respectfully traverse this assertion for a variety of reasons.

The Office action references the layer that includes the electrodes 3(R) and 8(T) as corresponding to the applicants' claimed patterned optical layer, but then references the retardation characteristics of the LC layer 5 for providing the different retardations. The applicants respectfully maintain that the inconsistent reference to two different layers of Kubo each corresponding to the applicants' claimed patterned layer does not support a rejection under 35 U.S.C. 102(b) per MPEP 2131.

Kubo's layer that includes the electrodes 3(R) and 8(T) is patterned, but it is not an optical layer that provides two different optical retardations. Kubo's LC layer 5 is an optical retardation layer, but it is not patterned. Further, the combination of Kubo's layers 5 and 3(R)/8(T) does not provide areas of different optical retardation.

The Office action asserts that the thickness of the LC layer 5 above the reflective electrode 3(R) is different from the thickness of the LC layer 5 above the transmissive electrode 8(T). The applicants respectfully maintain that there is no basis for this assertion, and the Office action provides no support for such an assertion. This assertion is further contradicted by Kubo's use of parallel lines to define the extent of the LC layer 5.

Further, the applicants specifically claim that the patterned optical layer that provides the different optical retardations is in the form of a film. Kubo fails to teach a patterned film that provides different retardations.

Because Kubo fails to teach a patterned optical layer that provides different optical retardation in each of the patterned area segments, as specifically claimed in claims 11 and 21, the applicants respectfully maintain that the rejection of claims 11-14 and 21-24 under 35 U.S.C. 102(b) over Kubo is unfounded, per MPEP 2131.

Claims 11, 17, 21, and 27 stand rejected under 35 U.S.C. 102(b) over Yoshida

Claims 11, 17, 21, and 27

Claim 11, upon which claim 17 depends, and claim 21, upon which claim 27 depends, claim a patterned optical layer that includes first area segments that provide a first optical retardation and second area segments that provide a second optical retardation, wherein the second optical retardation is substantially less than the first optical retardation.

Yoshida does not teach a patterned optical layer comprising a film that includes a pattern of first area segments and second area segments, each segment providing a different optical retardation, and does not teach a second optical retardation that is substantially less than a first optical retardation.

Yoshida teaches a patterned LC layer 120 that includes area segments 102a, 102b having substantially opposite optical orientations (180° +/- 10°). The applicants respectfully maintain that, as is well known in the art, regions of liquid crystal material that are oriented in parallel but opposite directions provide equal retardation. Yoshida discusses this at paragraph [0044], and states:

> "However, since the respective orientation-axis directions (corresponding to the slow axes) of the liquid crystal regions 102a and 102b are approximately parallel with each other (180° +/- 10°), the liquid crystal regions 102a and 102b exhibit a uniaxial optical anisotropy. Accordingly, the first phase compensation element having a slow axis within the plane parallel with the liquid crystal layer 120 and arranged such that the slow axis is approximately perpendicular to the respective orientation-axis directions of the first and second liquid crystal regions can effectively compensate for the optical anisotropy (retardation) of the liquid crystal layer 120."

The applicants note Yoshida's use of the singular noun form with regard to "the" optical retardation of the liquid crystal layer 120 that includes the parallel oriented regions 102a and 102b.

As is known in the art, optical retardation is measured and assessed relative to light that is perpendicular to the surface that provides the retardation. Thus, a fair reading of the applicants' teachings and claims of areas having different optical

retardations necessarily imply different optical retardations relative to light that arrives perpendicular to the area segments.

Light that strikes the surface obliquely will exhibit a different retardation than normally incident light, and Yoshida teaches the use of oppositely oriented LC material to provide equal retardation to normally incident light, but compensating retardation to obliquely incident light. Because Yoshida purposes chooses an orientation of 180° +/- 10° to provide substantially equal retardation to the normally incident light, Yoshida cannot be said to provide area regions that provide substantially different retardations.

Further, at paragraphs [0042] and [0043], Yoshida teaches the use of a layer 103 of uniform retardation to compensate for the residual retardation of the liquid crystal regions 102a and 102b that diminishes the black display level. The applicants respectfully note that if, as the Office action asserts, the retardation of regions 102a and 102b of Yoshida are substantially different, a layer of uniform retardation could not be used to compensate for the residual retardation produced by these regions.

Further, the applicants specifically claim that the optical retardation of one region is substantially less than the optical retardation in the other region. The applicants respectfully maintain that it is impossible to determine which of Yoshida's regions 102a or 102b will provide more or less retardation than the other, and neither can be said to provide substantially less retardation than the other. The Office action cites paragraph [0061] of Yoshida for teaching different retardations in each region, but the applicants note that in paragraph [0061], Yoshida teaches different retardations to obliquely incident light. At different viewing angles each of the regions 102a and 102b will exhibit different retardations to obliquely incident light; at some angles, the retardation to oblique light will be less through region 102a, at other angles, the retardation to oblique light will be less through region 102b. Thus, it is impossible to characterize either of these regions as exhibiting more or less retardation than the other.

Also, at paragraph [0069], Yoshida teaches:

"The liquid crystal layer 120 of the liquid crystal cell 102 thus obtained has a retardation of about 260 nm in the absence of an applied voltage. When a driving voltage of 5 V (black display) is applied, the liquid crystal layer 120 exhibits the maximum retardation (residual retardation) of about 70 nm in the rubbing direction."

That is, Yoshida teaches that the retardation of the liquid crystal cell 102 varies between about 70nm and 260nm, dependent upon the voltage applied across the cell. Each of the regions 102a and 102b are part of a single pixel cell 102; in operation, the same voltage will be applied across both regions, dependent upon the image value for the pixel, and both regions, having the same voltage, will exhibit substantially the same retardation.

Because Yoshida does not teach a patterned optical layer that includes first area segments that provide a first optical retardation and second area segments that provide a second optical retardation, wherein the second optical retardation is substantially less than the first optical retardation, as specifically claimed in claims 11 and 21, upon which claims 17 and 28 depend, the applicants respectfully maintain that the rejection of claims 11, 17, 21, and 24 under 35 U.S.C. 102(e) over Yoshida is unfounded, per MPEP 2131.

Claims 17 and 27

As claimed in each of dependent claims 17 and 27, the invention includes a first polymerized liquid crystal material having a planar orientation at a first angle; and a second polymerized liquid crystal material having a planar orientation at a second angle.

Yoshida does not teach polymerized liquid crystal material.

Contrary to the Office action's assertion, Yoshida's device will not function if polymerized liquid crystal material is used as the materials 102a and 102b in Yoshida's liquid crystal cell 102. Yoshida teaches, at paragraph [0032]:

"In response to a voltage applied from a pair of electrodes facing each other with the liquid crystal layer interposed therebetween, the orientation direction of the liquid crystal molecules in the liquid crystal layer is changed, thereby modulating the light passing through the liquid crystal layer (i.e., changing the polarization direction)."

That is, Yoshida's liquid crystal cell 102 is designed to selectively transmit light based on an applied voltage (Yoshida's [0032], [0069], and FIG. 7), via a change of retardation as the orientation of the liquid crystal molecules change. The molecules of a polymerized liquid crystal material cannot change orientation.

Because Yoshida fails to teach two polymerized liquid crystal materials having different planar orientations, as claimed in each of claims 17 and 27, the applicants respectfully maintain that the rejection of claims 17 and 27 under 35 U.S.C. 102(e) over Yoshida is unfounded, per MPEP 2131.

Claims 18 and 28 stand rejected under
35 U.S.C. 103(a) over Yoshida and Ham

Claims 18 and 28

Each of claims 18 and 28 specifically claim first and second area segments that include polymerized liquid crystal material having planar orientations at substantially different angles that differ by approximately 45 degrees.

MPEP 2142 states:

"To establish a *prima facie* case of obviousness ... the prior art reference (or references when combined) ***must teach or suggest all the claim limitations...***"

MPEP 2143 states:

"THE PRIOR ART MUST SUGGEST THE DESIRABILITY OF THE CLAIMED INVENTION" and "If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification."

Both Yoshida and Ham fail to teach first and second area segments that include polymerized liquid crystal material having planar orientations at substantially different angles.

Both Yoshida and Ham teach switchable liquid crystal material layers wherein the orientation of the liquid crystal molecules varies as a function of the applied voltage through the material.

As noted above, Yoshida teaches varying the orientation of the liquid crystal molecules at [0032] and [0069]. Ham provides a similar teaching at column 4, lines 27-31:

> "When a voltage is applied to the device, liquid crystal molecules 35 and 36 in the first and second domains are rotated in opposite directions to each other".

The proper operation of the devices of both Yoshida and Ham requires the use of liquid crystal material in the liquid-crystal state, so that the molecules of the material can be rotated. As is well known in the art, the molecules of a polymerized liquid crystal material cannot change their orientation.

Because neither Yoshida nor Ham teach or suggest the use of polymerized liquid crystal material, and because the replacement of Yoshida's or Ham's liquid crystal material with polymerized liquid crystal material will render either device unsuitable for its intended purpose, the applicants respectfully maintain that the rejection of claims 18 and 28 under 35 U.S.C. 103(a) over Yoshida and Ham is unfounded, per MPEP 2142 and 2143.

CONCLUSIONS

Because Kubo fails to teach a patterned optical layer that provides area segments having different optical retardations, the applicants respectfully request that the Examiner's rejection of claims 11-14 and 21-24 under 35 U.S.C. 102(b) over Kubo be reversed by the Board, and the claims be allowed to pass to issue.

Because Yoshida does not teach a patterned optical layer that includes first area segments that provide a first optical retardation and second area segments that provide a second optical retardation, wherein the second optical retardation is substantially less than the first optical retardation, the applicants respectfully request that the Examiner's rejection of claims 11, 17, 21, and 27 under 35 U.S.C. 102(b) be reversed by the Board, and the claims be allowed to pass to issue.

Because Yoshida does not teach two polymerized liquid crystal materials having different planar orientations, the applicants respectfully request that the Examiner's rejection of claims 17 and 27 under 35 U.S.C. 102(b) be reversed by the Board, and the claims be allowed to pass to issue.

Because both Yoshida and Ham fail to teach two polymerized liquid crystal materials having different planar orientations, the applicants respectfully request that the Examiner's rejection of claims 18 and 28 under 35 U.S.C. 103(a) be reversed by the Board, and the claims be allowed to pass to issue.

Respectfully submitted,

Robert M. McDermott, Attorney
Registration Number 41,508
804-493-0707

CLAIMS APPENDIX

11. A patterned optical layer comprising a film that includes a pattern of first area segments and second area segments, wherein:

the first area segments provide a first optical retardation;

the second area segments provide a second optical retardation; and

the second optical retardation is substantially less than the first optical retardation.

12. The patterned optical layer of claim 11, wherein the pattern provides for pairs of adjacent first area segments and second area segments.

13. The patterned optical layer of claim 11, wherein the pattern provides for a two-dimensional array of pairs of adjacent first area segments and second area segments.

14. The patterned optical layer of claim 13, wherein the two-dimensional array of pairs corresponds to an array of pixels in a display device.

17. The patterned optical layer of claim 11, wherein:

the first area segments include a first polymerized liquid crystal material having a planar orientation at a first angle; and

the second area segments include a second polymerized liquid crystal material having a planar orientation at a second angle,

the first angle being substantially different from the second angle.

18. The patterned optical layer of claim 17, wherein a difference between the first angle and the second angle is approximately 45 degrees.

21. A transflective display device comprising:

a plurality of pixels; and

a patterned optical layer that includes a pattern of pairs of first area segments and second area segments, each pair of the plurality of pairs corresponding to each pixel of the plurality of pixels,

wherein:

the first area segments provide a first optical retardation;

the second area segments provide a second optical retardation; and

the second optical retardation is substantially less than the first optical retardation.

22. The transflective display device of claim 21, wherein:

the first area segment of each pixel corresponds to a reflective portion of the pixel; and

the second area segment of each pixel corresponds to a transmissive portion of the pixel.

23. The transflective display device of claim 21, including a pair of polarizing layers that sandwich the pixels and the patterned optical layer.

24. The transflective display device of claim 23, wherein each pixel includes liquid crystal material sandwiched between electrodes.

27. The transflective display device of claim 21, wherein:

the first area segments include a first polymerized liquid crystal material having a planar orientation at a first angle; and

the second area segments include a second polymerized liquid crystal material having a planar orientation at a second angle,

the first angle being substantially different from the second angle.

28. The transflective display device of claim 27, wherein the difference between the first angle and the second angle is approximately 45 degrees.

EVIDENCE APPENDIX

No evidence has been submitted that is relied upon by the appellant in this appeal.

RELATED PROCEEDINGS APPENDIX

Appellant is not aware of any co-pending appeal or interference which will directly affect or be directly affected by or have any bearing on the Board's decision in the pending appeal.